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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,561	03/31/2004	Paul A. Koning	884.C15US1	7131

7590 02/24/2005  
Schwegman, Lundberg, Woessner & Kluth, P.A.  
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Minneapolis, MN 55402

EXAMINER

GURLEY, LYNNE ANN

ART UNIT PAPER NUMBER

2812

DATE MAILED: 02/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

<b>Office Action Summary</b>	<b>Application No.</b> 10/815,561	<b>Applicant(s)</b> KONING, PAUL A.	
	<b>Examiner</b> Lynne A. Gurley	<b>Art Unit</b> 2812	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 November 2004.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 and 30-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 and 30-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.


**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

  
**LYNNE A. GURLEY**  
**PRIMARY PATENT EXAMINER**  
**TC 2800, AU 2812**

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

This Office Action is in response to the election/response, filed 11/29/04.

Currently, claims 1-26 and 30-32 are pending.

#### ***Election/Restrictions***

1. Applicant's election without traverse of claims 1-26 and 30-32 in the reply filed on 11/29/04 is acknowledged.
2. Claims 27-29 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 11/29/04. Additionally, it is noted that claims 27-29 have been canceled by Applicant.

#### ***Specification***

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

#### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-26 and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US 6,756,294, dated 6/29/04, filed 1/30/02) in view of Brewer (US 2004/0142575, dated 7/22/04, filed 7/25/03).

Chen shows the method substantially as claimed, in figures 1-14 and corresponding text, with emphasis on figures 5-12, as forming a polymer 12 (polyimide passivation layer) disposed upon a substrate 10 under conditions to expose a bond pad 14 on the substrate, wherein a recess is formed in the polymer (fig. 5); mating a solder bump 41 (fig. 41) with the bond pad; and curing the polymer (column 6, lines 25-27). The solder bump is reflowed and solder flux is used (column 4, lines 11-15). A convex over-all profile or, contoured recess is formed in the polymer. Multiple layers of polyimide can be used for the passivation layer (column 5, lines 59-67; column 6, lines 1-46).

Chen lacks anticipation only in not teaching: forming an imprinted polymer disposed upon the substrate under conditions to expose the bond pad on the substrate by local flow of the polymer; a microprocessor mated with the solder bump, wherein mating includes at least partially flattening the convex over-all profile; wherein mating the solder bump with the bond

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pad includes mating a complementary-contoured solder bump in the recess; the film-to-substrate thickness ratio; the specifics of the polymer composition with resin and filler and pre-polymer.

Brewer teaches a method of imprinting a polymer on a substrate, with emphasis on figures 4A-4D and corresponding text [1165]-[0075]. The polymer is imprinted using a stamp for efficiency. Epoxies and resins are discussed as polymers on silicon wafers. Curing the polymer after imprinting is discussed [0075] to harden the polymer. These patterning techniques may be used for a variety of devices, which require the patterning of a polyimide layer.

It would have been obvious to one of ordinary skill in the art to have formed an imprinted polymer disposed upon the substrate under conditions to expose the bond pad on the substrate by local flow of the polymer; to have had a microprocessor mated with the solder bump, wherein mating includes at least partially flattening the convex over-all profile; to have had the method comprise the steps wherein mating the solder bump with the bond pad includes mating a complementary-contoured solder bump in the recess; to have had the claimed film-to-substrate thickness ratio; and to have had the claimed specifics of the polymer composition with resin and filler and pre-polymer, in the method of Chen, with the motivation that Brewer teaches a method of patterning the polymer passivation layers for a large area of IC devices. Therefore, using the imprinting technique taught by Brewer would make the patterning process of Chen more efficient. The Examiner notes that the resins and pre-polymer materials and epoxys, as well as the filler are conventional in the art when considering the use of polymers, as would be the reflow of the polymer. The microprocessor and the complementary-countoured solder bump would be obvious to one of ordinary skill in the art to have incorporated depending on the

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purpose of the device as a whole. Additionally, had the claimed film-to-substrate thickness ratio would have been reasonable to one of ordinary skill in the art.

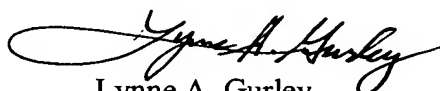
### *Conclusion*

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See the PTO Form 892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynne A. Gurley whose telephone number is 571-272-1670. The examiner can normally be reached on M-F 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on 571-272-1873. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Lynne A. Gurley  
Primary Patent Examiner  
Art Unit 2812

LAG  
February 22, 2005